

**WATERSHED PROTECTION
PLANS APPROVED EACH YEAR**

1956-1976

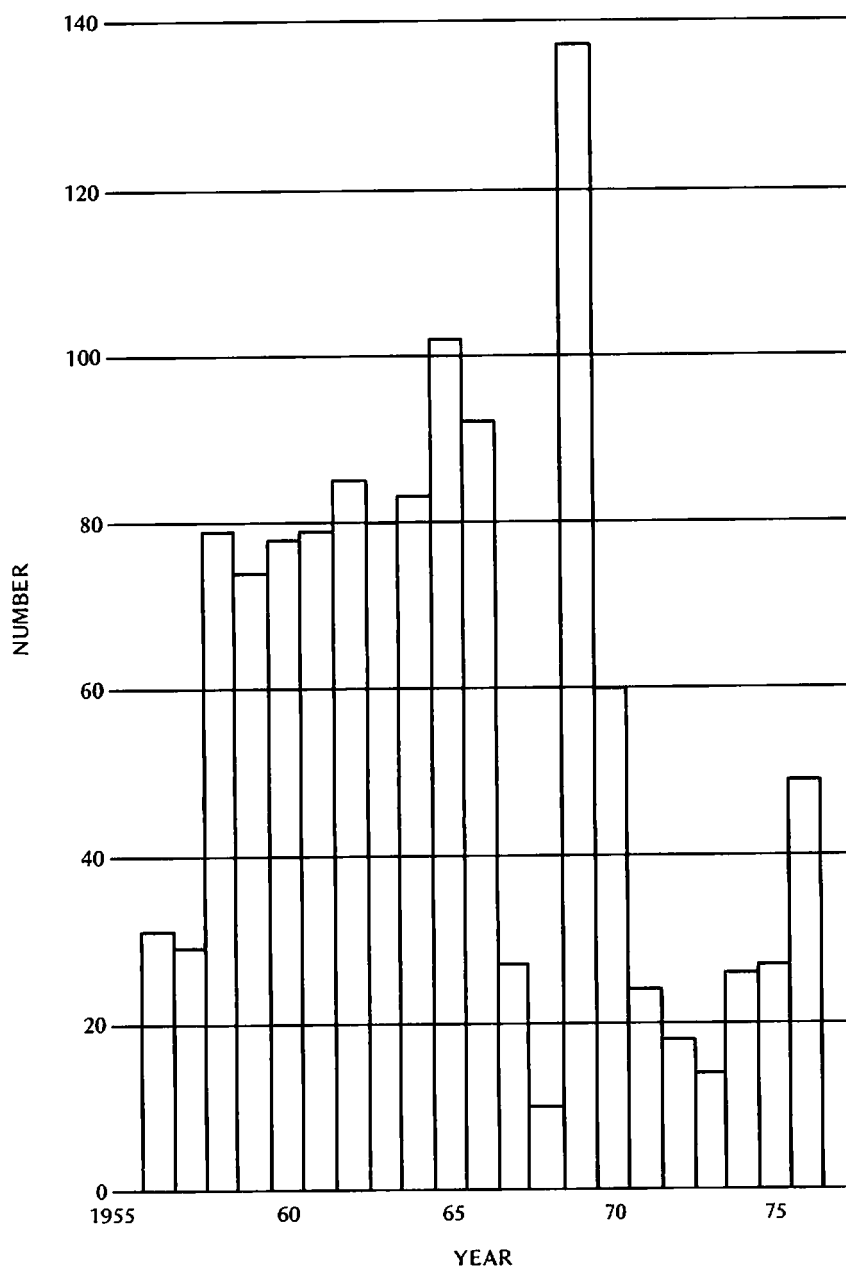


FIGURE 3

geologist, soil scientist, district conservationist, and a Forest Service technician, when applicable, develop the soil-cover-complex conditions for various segments of the watershed for without- and with-project conditions. Run-off curve numbers are calculated and run-off is estimated for storms in the evaluation series for both without- and with-project conditions. The percent reduction in surface run-off brought about by the land treatment project measures provides the basis for estimating damage reduction benefits to be credited to these works of improvement. Damage reduction benefits resulting from structural measures are estimated from a revised damage base. (131)

2. The closely knit interdisciplinary team used in watershed planning is not commonly found in other agencies' water resource programs.

3. Floodwater retarding structures have non-regulated principal spillways and usually have vegetated emergency spillways. Often the principal spillways operate with a two-stage inlet to increase the hydraulic and economic efficiency of the structure. The low stage may operate with a very low release rate to give maximum protection to the flood plain from the smaller, more frequent storms. The high stage will operate at a much higher release rate to permit more rapid dewatering of the flood pool and reduce the volume of flood water storage required.

**USDA OBLIGATIONS
WATERSHED PROTECTION AND
FLOOD PREVENTION PLANNING
ANNUAL**

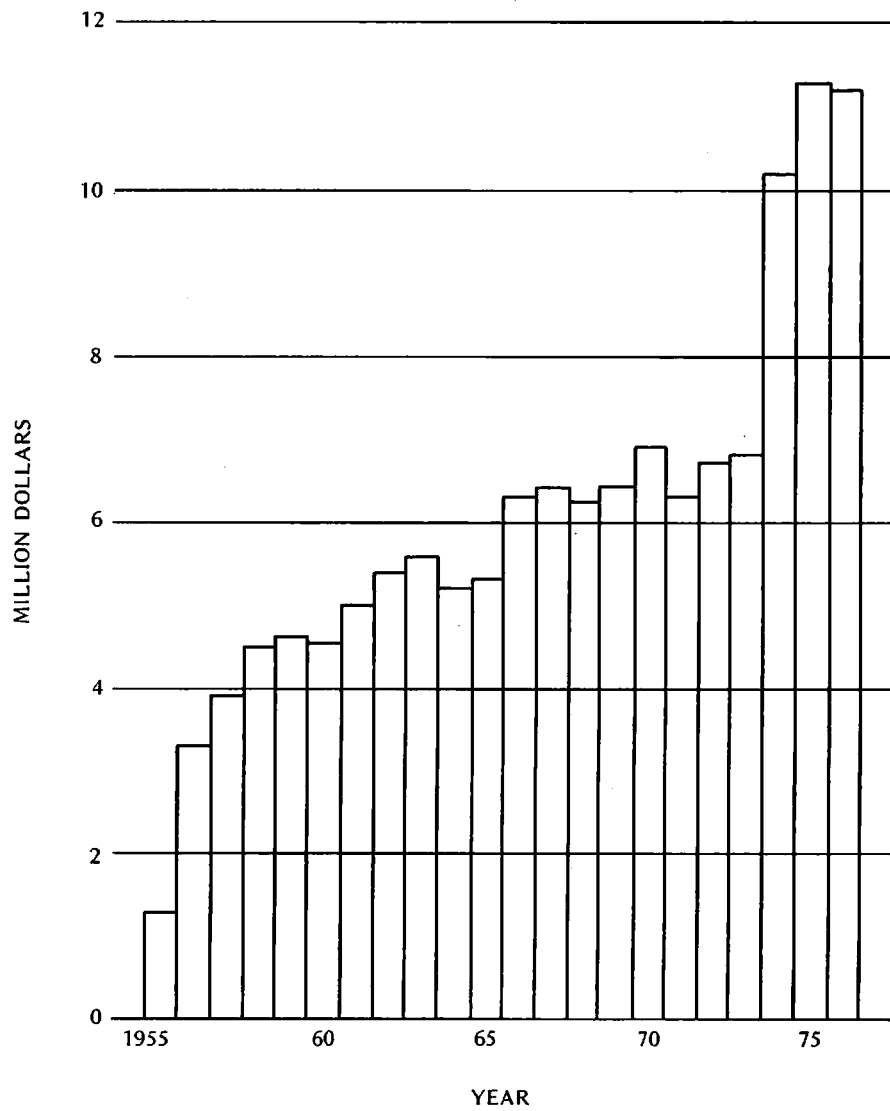


FIGURE 4

eligible watersheds for which project development is potentially feasible. (133)

The program proved to be quite popular with watershed communities having water problems. By January 1961, applications for planning assistance had been received on 1,088 watersheds. Of these, 516 had been authorized to receive planning assistance and 289 had been authorized for operations. (134) This popularity was reflected further by State legislative actions. Between 1955 and 1963, 43 State legislatures enacted laws to expedite cooperation between State and local agencies and the Department of Agriculture in watershed project activities. In all, 285 laws were enacted in the 43 States during this nine-year period. (135)

The popularity of the program has continued and there is still a demand for the services and assistance provided through it. By July 1, 1965, applications had been received for planning assistance on 2,317 watersheds. Of these, 1,111 had been approved for planning and 635 project plans had been approved for operations. As of April 1, 1977, the number of applications had reached 2,860, the number approved for planning - 1,752, and the number authorized for operations - 1,185. An analysis of these figures indicates a significant decrease in rate of

has made it increasingly difficult to meet the cost per benefitted acre limitation.

2. Flood prevention or drainage must be the dominant purpose; The determination of dominant purpose poses several questions:

- Will the determination be made on cost relationships or benefit relationships?
- Will keeping flood prevention the dominant purpose limit the formulation of the plan to something less than is needed or desired to solve all water resource problems and needs?
- Will this criterion relegate small projects to single purpose flood prevention projects?
- Will sponsors of small projects be denied municipal water supply or recreation services as a result of this criterion?

3. P.L. 566 project costs should be limited to \$5,000,000; With the great increase in construction costs, this places a severe limitation on project scale and scope.

4 Single purpose recreation sites should not be included in

transmitted to the Second Session of the 89th Congress and again on January 17, 1967, to the First Session of the 90th Congress. This legislation was not enacted. (137)

The Administration continued to send watershed work plans to the appropriate Congressional Committees. However, in each transmittal it stated that the Congress should either (1) enact the legislation proposed by the Administration, or (2) take action by the Congress as a whole on legislation authorizing individual or preferably groups of projects. If this were not done, the President gave instructions not to proceed.

2. National Environmental Policy Act of 1969 (NEPA):

The National Environmental Policy Act of 1969 (P.L. 91-190) included three major elements: (1) the declaration of a National environmental policy; (2) the establishment of a set of procedural requirements, including but not limited to the EIS (Environmental Impact Statement); and (3) the creation of a Council on Environmental Quality (CEQ) to advise the President and oversee the implementation of the Act. (140)

At the time this Act was passed SCS had 621 watershed projects in operation on which construction had not been completed. In addition there were an undetermined number of sub-watershed work plans in the 11 Authorized River Basin Watersheds under construction. The Act requires that an EIS be prepared when a proposed major Federal action will generate significant adverse effects on the quality of the human environment. SCS initially considered that the major Federal action had been taken when a watershed work plan was approved for operations. Therefore, no EIS would be required for individual structural elements of a project already under construction. This interpretation was not allowed to stand when CEQ issued its guidelines.

The greatest environmental controversy regarding SCS projects was directed at channel modification. Therefore, initial effort at preparing EIS's was directed at those projects containing channel modification as a measure. For other projects under construction environmental assessments were made, and, where it was determined that an EIS would not be made, an environmental impact appraisal was prepared to document the rationale for not preparing an EIS. (141) This procedure has been developing through the period 1970 - 1977 when various instructions, memorandums and other guidelines have been developing. The final rule, which

SCS got off to a slow start in the preparation of EIS's. Policies and procedures established by NEPA required considerable interpretation to translate them into operational criteria for administrative action. This task was left largely to the discretion of each agency and administrator. SCS considered the entire watershed and its several works of improvement as a single project. Each dam or channel modification was considered as an element. In fact, individual dams or channel reaches often were set aside as a construction unit. It did not consider the construction of any individual element as a major Federal action. Rather, it considered the authorization of a project as the major Federal action. When this definition was resolved it took appropriate action. This requirement became firm when the Natural Resources Defense Council got an injunction requiring an EIS on Chicod Creek Watershed Project in 1972. This was a channel project which had been in operation since August 22, 1966.

Andrew's analysis was that SCS interpreted NEPA as a reinforcement of its previous missions and policies. Consequently, it was at least two years after NEPA's enactment before it directed any change in the range of considerations entering into its water resource planning process. Also, SCS had not requested any new funds or personnel to carry out the mandate of NEPA until this time. (144)

SCS issued Watersheds Memorandum 103, a general policy statement, May 1, 1970. Environmental Memorandum No. 1, which provided specific instructions, was issued March 19, 1971. On May 24, 1972, Watershed Protection Handbook Notice 1-19 was issued. It directed SCS personnel to perform an environmental inventory during the first pre-planning environmental reconnaissance study; to present all feasible alternatives (including objectives which differed from those of the sponsors) in the impact statement; to conduct a public information meeting on the preliminary investigation report; and to append to the final EIS copies of all substantive letters of comment submitted on the draft statement. SCS had prepared 87 detailed statements on water projects by the end of 1971. (145)

Stream channelization projects were virtually the only category of SCS actions that aroused concern about environmental impacts. (146) Therefore, in February, 1971, SCS issued Watersheds Memorandum 108. It called for a thorough re-evaluation of all planned channel modification work not yet installed to determine what changes in work plans or engineering design were needed to further national policy and goals for the enhancement of the environment. Some 401 P.L. 566 watershed projects and 52 flood prevention sub-watersheds were studied. The projects were categorized into three groups, depending on the likely impact of the remaining channel work on the environment. The findings were: (1) 44 percent were found to have either a positive effect or only a minor adverse impact; (2) another 44 percent were found to require some modifications to avoid possible adverse impacts; and (3) only 12 percent of the projects were found to need major changes. (147)

In the midst of the 108 review, SCS began a computer analysis of all planned and constructed channel work. This study covered 54 pilot

watersheds, 1057 P.L. 566 watersheds and 303 flood prevention sub-watersheds. The findings of this study were quite interesting. The total channel work planned amounted to a little over 21,000 miles. This included work on natural streams, man-made ditches, previously modified channels, and new channels. It included perennial streams, intermittent streams, and those that flow only after heavy rains. (148)

A further analysis of the study data showed that modification had been planned on just over 3,000 miles of natural, perennially flowing streams. This represented 14 percent of the total planned channel work of SCS. When this planned work was added to planned modification of man-made ditches and previously modified channels that had perennial flow or ponded water prior to the project, the total amounted to about 5,500 miles, or 26 percent. The remainder of the planned channel work included:

- 1,100 miles of clearing or removal of loose debris within present channels on streams and ditches with perennial flow;
- 7,000 miles of channels with intermittent flow, or involving new drainage mains or laterals;
- 7,000 miles of channels that flow only during periods of surface run-off; and
- 200 miles of streambank or grade stabilization work on any type channel. (149)

As of December 30, 1976, the total miles of channel modification included in SCS work plans amounted to 21,778. Of this amount 9,927 miles had been constructed as of that date. (150) These figures contradict rather strongly the charges that SCS plans to dig up 150,000 miles of

after channelization. (154) An analysis of sites both above and below the sewage outfall failed to indicate any significant effects of the sewage effluent upon benthos at downstream sites. (155) The findings of this study indicate that there is no basis for a claim that channelization alone will result in a biological desert of longstanding impacts.

In a letter dated October 3, 1972, a staff member of NRDC referred to Walter Cronkite's CBS Evening News telecast which included a brief TV newscast regarding the precedent-setting Chicod Creek lawsuit in North Carolina. The letter stressed the fact that the suit claimed the

- the issue of downstream effects from upstream channel work was of minor to no significance on 31 of the 42 projects and uncertain on seven others.

Thus, the research data suggested that about 36 of the 42 projects offered no real basis for the kind of environmental policy action which popular expression of the issue had seemed to call for. (158)

The changes in SCS guidelines between 1972 and 1974 represented a major shift in posture toward implementation of NEPA's procedures. CEQ testified in 1974 that the impact statements produced by the Corps of Engineers were the best among Federal agencies, and those of SCS were among the most improved. (159) The demands on the time of watershed planning personnel to meet the requirements for preparing environmental impact statements for new and old plans, for making channel studies, and for responding to channelization correspondence as stipulated

The National Historic Preservation Act, P.L. 89-665, 80 Stat. 915, as amended authorizes the Secretary of Interior to maintain and expand a National Register of Historic Places (NRHP). It also establishes the Advisory Council on Historic Preservation (ACHP). Section 106 of this Act requires that prior to the approval of any Federal or Federally-assisted or licensed undertaking, the Federal agency shall afford the ACHP a reasonable opportunity to comment, if properties listed in, or eligible for listing in, the NRHP are affected. (162)

Executive Order 11593, Protection and Enhancement of the Cultural Environment, provides that the Federal government shall furnish leadership in preserving, restoring, and maintaining the historical and cultural environment of the Nation. (163)

SCS recognizes that significant historical, archeological, and architectural resources are an important part of the Nation's heritage. It takes reasonable precautions to avoid damaging any of these and works with the National Park Service and the Advisory Council on Historic Preservation in identifying and seeking to avoid or mitigate adverse effects of SCS-assisted projects on the Nation's cultural resources. (164)

SCS assistance to individual land users under the Conservation Operations and Great Plains Programs is considered to be a nonproject undertaking. Its actions in these cases are limited to advisory activities. In the case of project-type programs, SCS determines the environmental effects including archeological and historical impacts as an integral part of the environmental assessment process. (165)

SCS works with the following agencies in carrying out its responsibilities under this program;

- Advisory Council on Historic Preservation which is national in scope. The Secretary of Agriculture is a member of this Council.
- National Park Service. This agency also works at the national level and many of its actions duplicate those of the Advisory Council. It contains the Office of Archeology and Historic Preservation and the Office of National Register of Historic Places.
- State Historic Preservation Offices.

Often there is considerable difficulty in getting agreement among each of these agencies. Archeologists want a survey of each farm before assistance is given under the Conservation Operations and Great Plains Programs. However, this is impractical.

It is estimated that this program will require a transfer of from \$1 million to \$3 million of SCS funds to the National Park Service (NPS) annually. Each SCS State Conservationist can transfer to NPS up to one percent of the Federal share of construction costs for each measure causing a problem.

5. Principles and Standards:

In accordance with the provisions of Section 103 of the Water Resources Planning Act, P.L. 89-80, the Water Resources Council (WRC) developed a set of Principles and Standards to form the basis for formulation and evaluation of Federal water and related land resource projects. On September 10, 1973, the WRC published the Principles and Standards as approved by the President in the Federal Register. These became effective October 25, 1973, and replaced the policies established by Senate Document 97 which had provided guidance since 1962. (166)

A fuller discussion of the Principles and Standards is contained in a later chapter. For consideration here it needs to be noted that the basic areas of concern regarding the Principles and Standards are:

- Two equal planning objectives - national economic development objective and environmental quality objective;

- A system of four accounts to be developed during the planning process - the National Economic Development Account, the Environmental Development Account, the Regional Development Account, and the Social Well-Being Account;

- Discount rates to be established in accordance with the cost of Federal borrowing;

- New plan formulation procedures which provide for develop-

Briefly, this agreement provided that:

- SCS would be responsible for protecting upstream (250,000 acres and less) agricultural flood plains and those upstream urbanized areas where flood problems of minor magnitude exist;
- The Corps would be responsible for flood protection for downstream agricultural flood plains and for urbanized areas where flood problems of major magnitude exist;
- Where a flood problem of intermediate magnitude exists in an urbanized area in an upstream watershed, the two agencies would reach an agreement on a case-by-case basis as to which one would provide the needed flood protection.

More specific details can be obtained from the complete agreement. (169)

The changes since 1969 have had a significant impact on the watershed program. This has been true not only in the time and commitments required for planning but also in other respects. In the early years, 1954-1969, the watershed program was really a peoples' program. The local people determined their objectives, the scale and scope of development desired, agreed to their level of commitment, and moved ahead with their program with Federal assistance. It was truly a Federally assisted program. Under later developments, particularly the Principles and Standards and NEPA, outside influences have a significant impact on project formulation. Often they are not aware of local needs, local conditions, and local ability to pay.

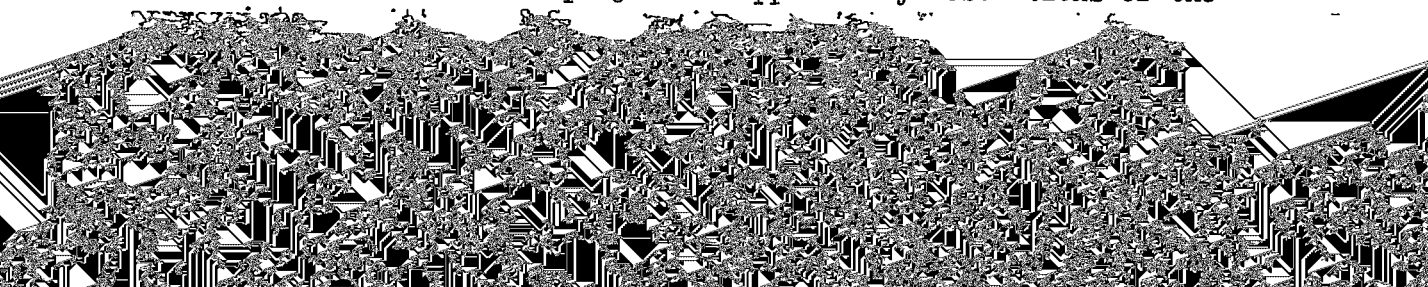
Heavy public involvement of a local nature is desirable in the watershed planning process. However, the wide open arrangements of the present procedures do give rise to some pertinent questions:

- Should individuals or organizations from outside a region be able to impact decisions for which they have no financial or moral obligations for implementing?
- Should local groups which refuse to participate in project development and operation be able to impose financial and moral obligations on project sponsors which are beyond their wishes and their ability to pay?

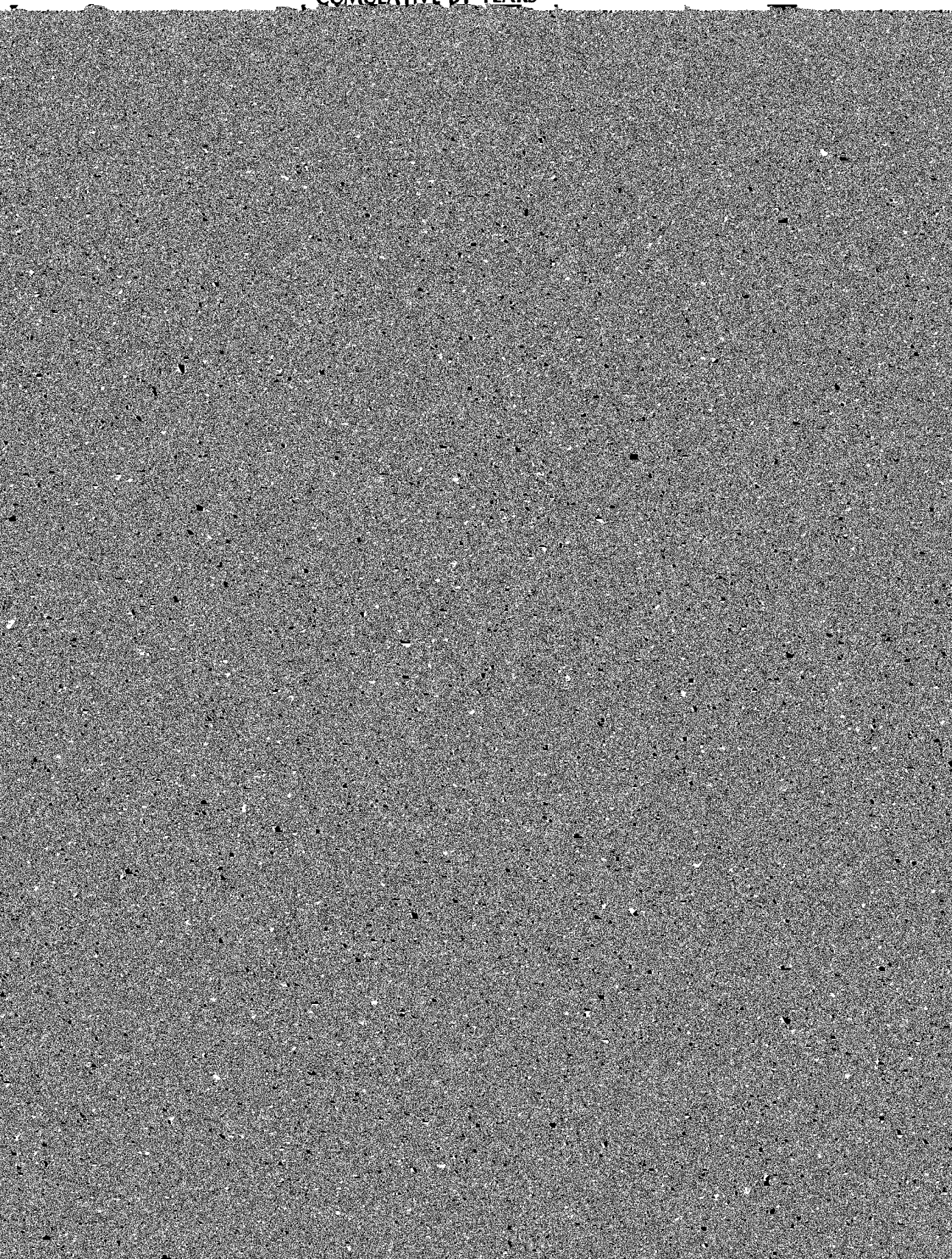
Changes in the watershed protection program in the last several years are moving this program rapidly toward a Federal rather than a Federally assisted program. In the long run, is this in the best interest of most of the people of the Nation?

Watershed Operations

When a watershed project is approved by resolutions of the



**PROJECTS COMPLETED
CUMULATIVE BY YEARS**



**USDA OBLIGATIONS
WATERSHED PROTECTION OPERATIONS
ANNUAL**

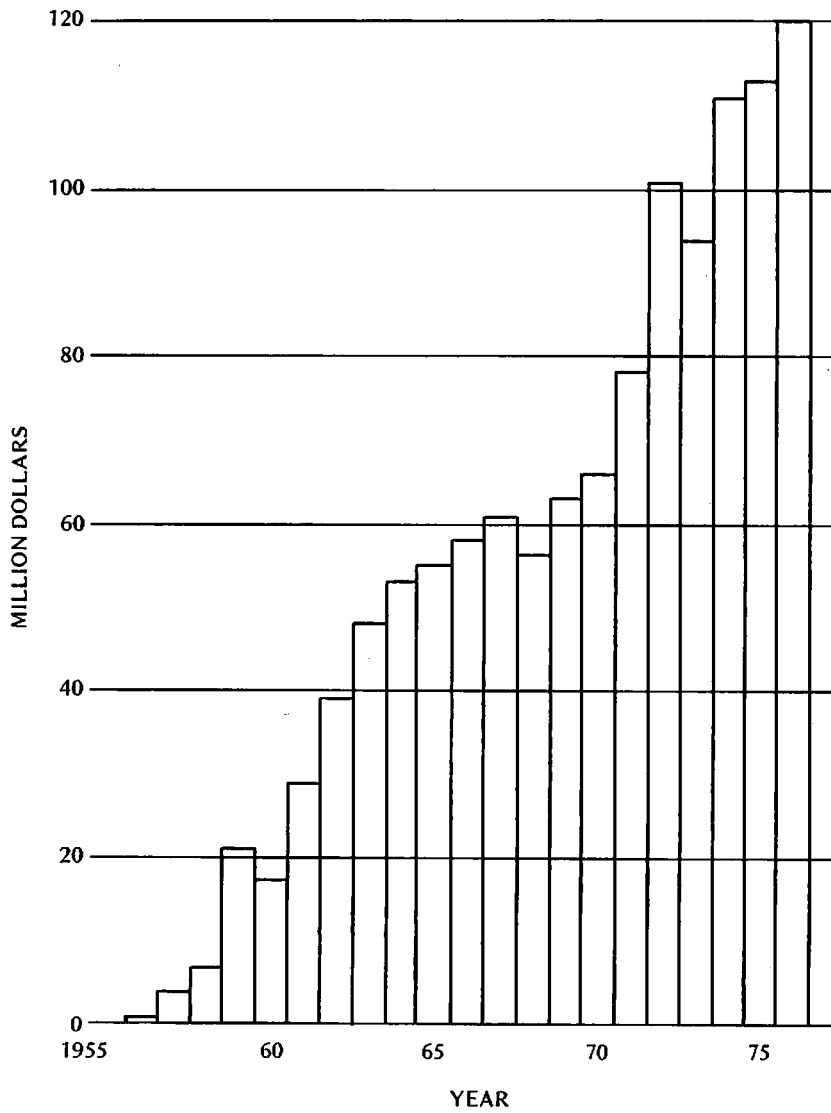


FIGURE 6

in accordance with the plan, and structural measures can be installed.

Local sponsors must provide the necessary land rights for each structural measure and have available their share of the construction costs as specified by the plan. An operation and maintenance agreement must be signed by the responsible parties. Engineering designs and specifications must be developed for each structural measure, invitations to bid advertized, and contracts let. Then construction must be supervised and a final report issued to show the measure has been installed as planned.

In the early phases of the program most land rights were granted to the sponsors. Now these often have to be purchased and, on occasion, condemnation procedures have to be followed. Demands for public access

All 1,185 watershed projects contain watershed protection as a purpose and 1,171 of these include flood prevention as a purpose. In this sense all but 14 projects are multiple purpose. However, SCS usually considers watershed protection and flood prevention as a single purpose since these purposes are so closely related. Drainage is a purpose in 282 projects; irrigation in 89; rural water supply in 2; recreation in 247; fish and wildlife in 89; municipal and industrial water supply in 152; and water quality management in 1. (172) Of the projects completed, drainage, recreation, municipal and industrial water supply, fish and wildlife, and irrigation are the most popular other purposes, in that order. There are 643 multiple purpose projects approved. This is over 54 percent of the total number.

Problems

The major problems affecting the Watershed Operations program are the more sophisticated designs for the major structural measures. These will be discussed by measures.

1. Dams

Early floodwater retarding structures were limited to 5,000 acre feet total storage and were single purpose. P.L. 1018 increased the total storage to 25,000 acre feet but held flood detention storage to 5,000 acre feet. Later allowable flood detention storage was increased to 12,500 acre feet. Allowable storage for irrigation, recreation, municipal and industrial water supply, rural water supply and water quality

Since SCS has no legal maintenance responsibility, its planning and design criteria are based on the assumption that minimum reliance on maintenance is the most economical design over the life of the structure. In the project programs each dam is inspected every three months during the first year. It is also inspected after each major storm or occurrence that might have adversely affected the structure, with a minimum of at least one annual inspection. (174)

The safety record of SCS project type dams is excellent. Failures from all causes have amounted to less than 0.5 of 1 percent.

In carrying out its many programs, the SCS has a part in the construction of more dams each year than any other agency - Federal, state or international. In the spring of 1972, SCS listed over 1,400 dams with the U. S. Committee on Large Dams. Of this number 645 had heights in excess of 50 feet. (175) This is considerably more large dams than have been built by any other agency in the world.

Woodward-Clyde Consultants stated that it is vital to their study to recognize that the dams constructed with SCS involvement are many in number but vary widely in potential hazard. (176) At the close of the 1976 fiscal year SCS had been involved in the construction of 2,566,615 various types of dams. These are classified as follows:

<u>Type</u>	<u>Number</u>
Multipurpose	9,014
Floodwater retarding structures	12,703
Total detention type structures	21,717
Debris basins	78,761
Grade stabilization structures	283,104

emphasized. (179) In 1926, C. E. Ramser discussed drainage ditch conditions in 1924 - 1926. (180)

On December 3, 1938, by Secretary's Memorandum 799, Secretary H. A. Wallace assigned to H. H. Bennet drainage responsibilities previously held by the Bureau of Agricultural Engineering. The Service was already involved in drainage work and had been since establishment of CCC camps. CCC drainage camps assigned to SCS in 1935 were already working with organized drainage enterprises and associations. (181) So by 1954 SCS engineers were well acquainted with the design and construction of drainage channels.

Drainage run-off curves were developed from the formula

$$Q = C M^{5/6}$$

where Q = run-off in cubic feet per second

C = drainage coefficient

M = drainage area in square miles

Drainage coefficients had been established for different conditions based on some research and a wide range of experience. These were followed carefully by all drainage engineers and became the basis for project channel design. It soon became evident that they were not adequate for multiple purpose channel design. An analysis in the Southeast showed that a drainage channel designed on the coefficient for the Mississippi delta would provide a one-year level of flood protection to that area, while one designed on the coefficient for the Atlantic Coastal Region would provide a five-year level of protection in North Carolina.

As of June 30, 1976, SCS had given assistance in the construction of 16,971 miles of open channels. (184) Of these, 9,927 miles had been constructed under the watershed programs. (185) In addition to these open channels, SCS had assisted, through all its programs, in the installation of 388,810 miles of main farm drainage ditches and laterals.

Summary

The SCS watershed programs have been very popular with farmers and rural communities throughout most of the nation. In some areas, some elements such as channelization, have been quite controversial among special interest groups.

Watershed projects have had a profound impact on local rural economies, stability of crop production, local water supplies, local recreational opportunities, improved living environment, local health and safety conditions and local flood protection. Opportunities for local employment have been greatly increased as a result of local industrial development made possible by dependable municipal and industrial water supplies for small towns and local flood protection.

There is still a great need for watershed program assistance as reflected by the Conservation Needs Inventory (186) and the back log of unserved applications. (187)

CHAPTER 5

USDA RIVER BASIN STUDIES

Organization

Section 6 of P.L. 566 authorized the Secretary of Agriculture, in cooperation with other Federal, state and local agencies, to make investigations and surveys of the watersheds of rivers and other waterways as a basis for the development of coordinated programs. In Secretary's Memorandum 1325, April 1, 1953, the Secretary of Agriculture had assigned the responsibility for administration of USDA water resource programs to SCS. (188) Title I, Administrative Regulations of the Department of Agriculture, assigned various responsibilities for this activity among other agencies of the Department. These responsibilities

and interpretations of these projections with respect to use and requirements for water and related lands;

c. Appraisal of suitability and capability for forested lands to satisfy future demands for products and services, and determination of kinds, amounts, and costs of watershed practices needed on forest lands;

d. Estimates and evaluations of the impacts of water resource development plans upon forest resources.

3. ERS

a. Basin-wide economic aspects and elements of USDA program in comprehensive river basin planning;

b. Development and analyses of agricultural economic base of river basin studies to include appraisal of trends in land and water use;

c. Development of projections of agricultural production, employment, income, rural population, and land use for the economic analysis of agricultural water management, needs, and potentials;

d. Analyses of economic impact of flood prevention, land drainage, irrigation, and other water development programs on production, employment, and income in agricultural and related sectors of the economy;

e. Evaluation, with Bureau of Outdoor Recreation and other agencies, of the demand for and economic benefits of water-based recreation developments needed in river basin investigations.

Coordination of planning activities is effected through the use of advisory committees. The Washington Advisory Committee (WAC) coordinates all USDA river basin planning activities at the National level. It is composed of a member from SCS (chair agency), ERS, and FS. When any proposal affects the interests of the Farmers Home Administration, Rural Electrification Administration, Agricultural Research Service, and/or Agricultural Stabilization and Conservation Service, representatives of these agencies are invited to participate. The duties of the WAC are: (189)

1. Provides coordination and oversight of all USDA river basin activities;

2. Reviews USDA planning activities, develops planning procedures, and recommends needed administrative adjustments;

3. Formulates USDA guidelines, standards and instructions;

4. Reviews and evaluates survey proposals and recommends new planning starts;

5. Reviews and coordinates agency funding requirements (SCS is responsible for budgeting and requesting USDA funds for river basin planning activities);

6. Reviews and recommends approval of USDA plans of work for proposed studies and USDA reports of completed studies;

7. Provides other coordination needed.

The Field Advisory Committee (FAC) is composed of representatives of SCS, ERS, and FS. The SCS State Conservationist responsible for the study chairs the FAC. Usually the sponsoring State agency is invited to attend and participate in FAC meetings. These are held at least quarterly. In some states the sponsoring state agency sets up its own coordinating committee and gives active leadership to the study. In these cases the FAC members meet with this committee and usually hold a separate meeting before or after the State meeting. This arrangement is compatible with the FAC concept since its responsibilities are for intra-Departmental coordination. The duties of the FAC are: (189)

1. Field coordination of USDA agency activities;
2. Field liaison with state and other Federal agencies, when needed;
3. Preparation of survey plan of work;

4. Interpretation of National Wildlife Refuge System

During the last few years interest has been developing in USDA studies which emphasize analyses and solutions to individual problems or needs. When such conditions exist there is no need to spend the time and money to examine a broad range of rural and agricultural problems and needs. Some examples of such studies are specific needs in one problem area, such as for a state water plan, salinity studies in the western states, a study of special erosion and sedimentation problems in such areas as the Palouse area of south-eastern Washington. The increasing state water quality planning efforts under Section 208 of P.L. 92-500 and state land management decisions are expected to put more emphasis on these specialized river basin studies.

In the period 1969 - 1970 the Water Resource Council stopped using the terminology Type 1 and Type 2. Therefore, USDA stopped using

- over 900 RC&D measures;
- about 35 wild and scenic river proposals;
- almost 20 flood hazard studies.

Other decision impacts resulting from cooperative river basin studies include:

- Development of forest management guidelines to control sediment;
- Changes in some state standards for flood protection;
- Changes in proposed highway and pipeline locations to protect natural resources;
- Implementation of state reservoir site-acquisition programs;
- State flood plain management laws and regulations;
- Erosion and sediment control ordinances;
- Land use development plans;
- Changes in scope of P.L. 566 and CE projects;
- Deauthorization of some P.L. 566 and CE projects;
- Data for Sec. 303 e basin plans developed by private consultants;
- County-wide drainage plans;
- Water quality monitoring programs;
- State wetland management programs;
- Community water supply developments;
- and many others.

Examples:

1. Among the first Type 4 studies were two sponsored by the Corps of Engineers. Both of these were started in 1957.

a. The Delaware River Basin:

The Corps of Engineers was authorized to make a study of the Delaware River Basin by the Flood Control Act of 1948 (P.L. 80-858) as amended by the Flood Control Act of 1950 (P.L. 81-516) and the Flood Control Act of 1956 (P.L. 84-685). SCS was requested to assist in the study under the provisions of Sec. 6, P.L. 566. Appendix G to the "Report on the Comprehensive Survey of Water Resources of the Delaware River Basin", December 1960, was prepared by USDA. Appendix H, "Fluvial Sediment" was prepared

- (1) flood control and prevention;
- (2) domestic and municipal water supplies;
- (3) improvement and safeguarding of navigation;
- (4) reclamation and irrigation of land, including drainage;
- (5) possibilities of hydroelectric power and industrial development and utilization;
- (6) soil conservation and utilization;
- (7) forest conservation and utilization;
- (8) preservation, protection and enhancement of fish and wildlife resources;
- (9) development of recreation;
- (10) salinity and sediment control;
- (11) pollution abatement and the protection of public health; and
- (12) other beneficial and useful purposes. (196)

The basins covered by the survey are: Savannah, Altamaha, Saint Marys, Apalachicola-Chattahoochee, and Perdido-Escambia River Basins (and intervening areas) in the States of South Carolina, Georgia, Florida and Alabama. (197)

The Act established a commission to be known as the United States Study Commission on the Savannah, Altamaha, Saint Marys, Apalachicola-Chattahoochee, and Perdido-Escambia River Basins and intervening areas. It became known as the Southeast River Basins Study Commission. The Commission was composed of 11 members; a chairman; six members representing Federal departments (the Army, Commerce, Health, Education and Welfare, Agriculture, the Interior and the Federal Power Commission); and four members representing the states of South Carolina, Georgia, Florida and Alabama. (198)

The Department of Agriculture was represented initially by John Short, who was also the USDA member on the AWRBIAC. He was succeeded by Cecil Chapman, SCS State Conservationist, Georgia. USDA inputs were provided by AMS, ARS, ASCS, ERS, FmHA, FS, and SCS. SCS established a full time team in Athens, Georgia, which developed field data on a watershed and subwatershed basis.

The Study concluded that:

- (1) availability of land and water is not a limiting factor in development;
- (2) long-range needs related to land and water resources can be met;
- (3) all elements of the plan need not be developed at once;
- (4) flood damages are local problems;
- (5) ground and surface waters are of good quality and adequate for foreseeable needs;
- (6) waterway facilities can be expanded to meet projected increases in waterway traffic;

(7) an increase in farm drainage and irrigation is expected;

(8) hydroelectric facilities can meet only a small part of the projected demand;

(9) industrial development and utilization are key factors for the area;

(10) soil conservation and utilization programs included in the plan will meet 75 percent of the needs;

(11) accelerated forestry programs can meet projected production needs to 2000;

(12) projected user-days of hunting and fishing can be accommodated by the plan;

(13) recreational needs can be met;

(14) sediment can be controlled by conservation measures;

(15) additional waste treatment facilities are needed;

(16) beach erosion and hurricane damage potentials need further study;

(17) special spot planning by the Federal government

In response to this directive, the Corps of Engineers, with other Federal, state and local, and private agency cooperation, made a survey of the water and related resources problems and potential developments of the region. Its report "Development of Water Resources in Appalachia" was published in December 1969. The Main Report was divided into six parts, 15 volumes. The Appendicies involved another 10 volumes. (206)

This survey was unique in that it set forth regional growth as a principal objective. Normally, water resource developments are evaluated on National economic benefits. Regional development and regional benefits are given only secondary consideration. However, in this study, Congress was interested in regional growth and development without concern of the impacts they might have on other regions. (207)

Part IV, Vol. 12, of the Main Report, presented the special evaluation procedures developed and used for project evaluations. This discussion also presented several methods that can be employed to analyze the expansion effects (job-producing potential) of water resource developments. (208)

USDA prepared a report on the soil, timber, and water resources of Appalachia from the standpoint of agriculture and conservation interests. Modifications of the going programs administered by various agencies within USDA were proposed. The Forest Service was requested to up date and present its plans for accelerating recreational facilities development in the 15 National Forests of Appalachia. (209)

For each of the 13 states which lay within or partially within the Appalachian Region USDA agencies provided the following information:

a. SCS

(1) Upstream Watershed Projects Completed or in Operation.

(2) Upstream Watershed Projects Authorized but needing acceleration for Early Action Program.

(3) Upstream Watershed Projects planned but which should be authorized and accelerated for Early Action.

(4) Upstream Watershed Projects which should be planned and installed under an accelerated program before 1990.

(5) Land treatment measures which should be installed or applied under an accelerated program by 1980.

b. FS

(1) An accelerated land treatment program in the National Forests.

(2) An accelerated recreation development program in the National Forests. (210)

Another unusual feature of this report is the Royalton Reservoir-Salyersville Area Interagency Project proposal. It would consist

COOPERATIVE RIVER BASIN SURVEYS
Completed as of July 1978

STUDY NAME

STATES COVERED

1. Lower Mississippi River & Tributaries	MS, AR, IL, LA, MO
2. Kansas River Basin in Kansas	KA
3. Huron River Watershed	MI
4. Des Moines River - Red Rock Reservoir	IA
5. Savannah River - Hartwell Dam	SC
6. Delaware River Basin	PA, DE, NJ, NY
7. Arkansas Multiple-Purpose Project	AR, OK
8. Bayou Bartholomew	AR, LA
9. Cape Fear River Basin	NC
10. Colorado River Storage Project*	UT, AZ, CO, NM, WY
11. Oregon Rivers (17 Subbasins)	OR
Middle (Central) Willamette River Basin	
South Coast (Coos-Coquille) Drainage Basin	
Deschutes River Basin*	
Hood Drainage Basin	
John Day River Basin	
Lower Willamette River Basin	
Malheur Lake Drainage Basin	
Middle Coast Drainage Basin	
North Coast Drainage Basin	
Powder Drainage Basin	
Umatilla Drainage Basin	
Upper Willamette River Basin*	
Klamath Drainage Basin	
Rogue-Umpqua River Basin	
Malheur-Owyhee Rivers Basin	
South Coast River Basin	
Grande Ronde River Basin	
12. Humbolt River Basin	NV
13. Upper Mississippi River - Great Lakes*	MO, IL, IN, MI, OH, WI
14. Yazoo-Mississippi River Basin	MS
15. Potomac River Basin	VA, MD, PA, WV
16. Sevier River Basin	UT
17. Tombigbee River Basin	MS, AL
18. Southeast River Basin*	GA, AL, FL, NC, SC
19. Texas Study Commission*	TX
20. Colorado Rivers (6 Subbasins)	CO, UT, WY
Colorado River Basin	
Gunnison River Basin	
White River Basin	
Yampa River Basin	
San Juan River Basin	
Dolores River Basin	
21. James River Basin	SD
22. Meramec River Basin	MO
23. Poteau River Basin	OK, AK
24. Florida Rivers (3 Subbasins)	FL, AL, GA
St. Johns River Basin & Intervening Coastal Areas	
Kissimmee-Everglades Area	
25. Big Blue River Basin	NE
26. Elkhorn River Basin	NE

STUDY NAME

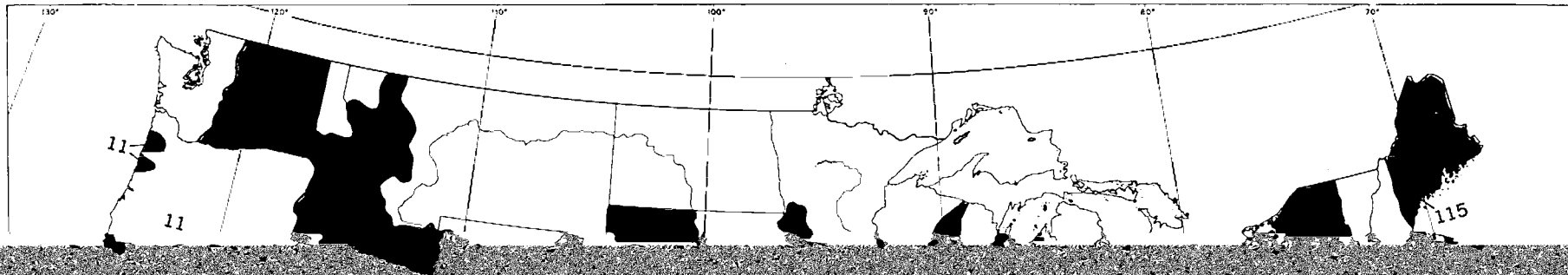
STATES COVERED

27. Little Blue River Basin	NE
28. Coastal & Independent Streams River Basin	MS, LA
29. North Coastal River Basins	CA, OR
30. Big Sioux River Basin	SD, IA, MN
31. Arkansas River Basin in Kansas	KS
32. South Grand-Osage River Basin	MO
33. Upper Rio Grande Basin	NM
34. Central Lahontan River Basins (2 Subbasins)	NV, CA
Walker River Basin	
Carson River Basin	
35. Lower Rio Grande Basin	TX
36. Appalachian Water Resources Study*	WV, AL, GA, KY, MD
	NC, NY, OH, PA, SC,
	NE, KS
37. Nemaha River Basin	NE
38. Niobrara River Basin	TN
39. Chickasaw-Metropolitan District	VA
40. James River Basin	SC, NC
41. Santee River Basin	NY
42. Western New York River Basin	TN, MS
43. Hatchie River Basin	NC
44. Cape Fear River Basin Restudy PL 87-639	AR
45. Muskingum River Basin	AR
46. Bayou Meto Basin	MI
47. Southeast Michigan Rivers Basin	WA
48. Southwest Washington Rivers Basin	WI
49. Southeast Wisconsin Rivers Basin	LA
50. Southwest Louisiana Rivers Basin	MS, AL
51. Tombigbee River Basin Restudy	MA
55. Massachusetts Water Resources Study (1 Subbasin)	
Charles Study Area	
56. Hawaiian Rivers (2 Subbasins)	HI
Island of Hawaii	
Island of Oahu	
57. Wind-Bighorn, Clarke Fork River Basin	WY, MT
58. Big South Fork of the Cumberland River	TN
59. Blackwater-Lamine River Basin	MO
61. Texas Coastal Basin	TX
64. Ashley-Combahee-Edisto River Basin	SC
65. St. Francis River Basin	AK, MO
67. Kankakee-Elkhart River Basins	IN
69. Iowa-Cedar Rivers Basin	IA, MN
71. Monongahela River Basin	WV, MD, PA
72. Santa Cruz-San Pedro River Basin	AZ
73. San Gabriel River Basin-Joint Study PL 87-639	CA
74. Westwide Water Study	CO, AZ, CA, ID, MT,
	WA, WY
	IL
	TX
	MI, IN
	OK
75. Chicago Metropolitan Area Rivers	
85. Red River Above Denison Dam	
89. Kalamazoo River Basin	
102. Arkansas River Drainage Within Oklahoma	

RIVER BASIN SURVEYS
COOPERATIVE STUDIES
(Type 4)
In Progress - February 1978

U. S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



USDA OBLIGATIONS
RIVER BASIN PLANNING
ANNUAL

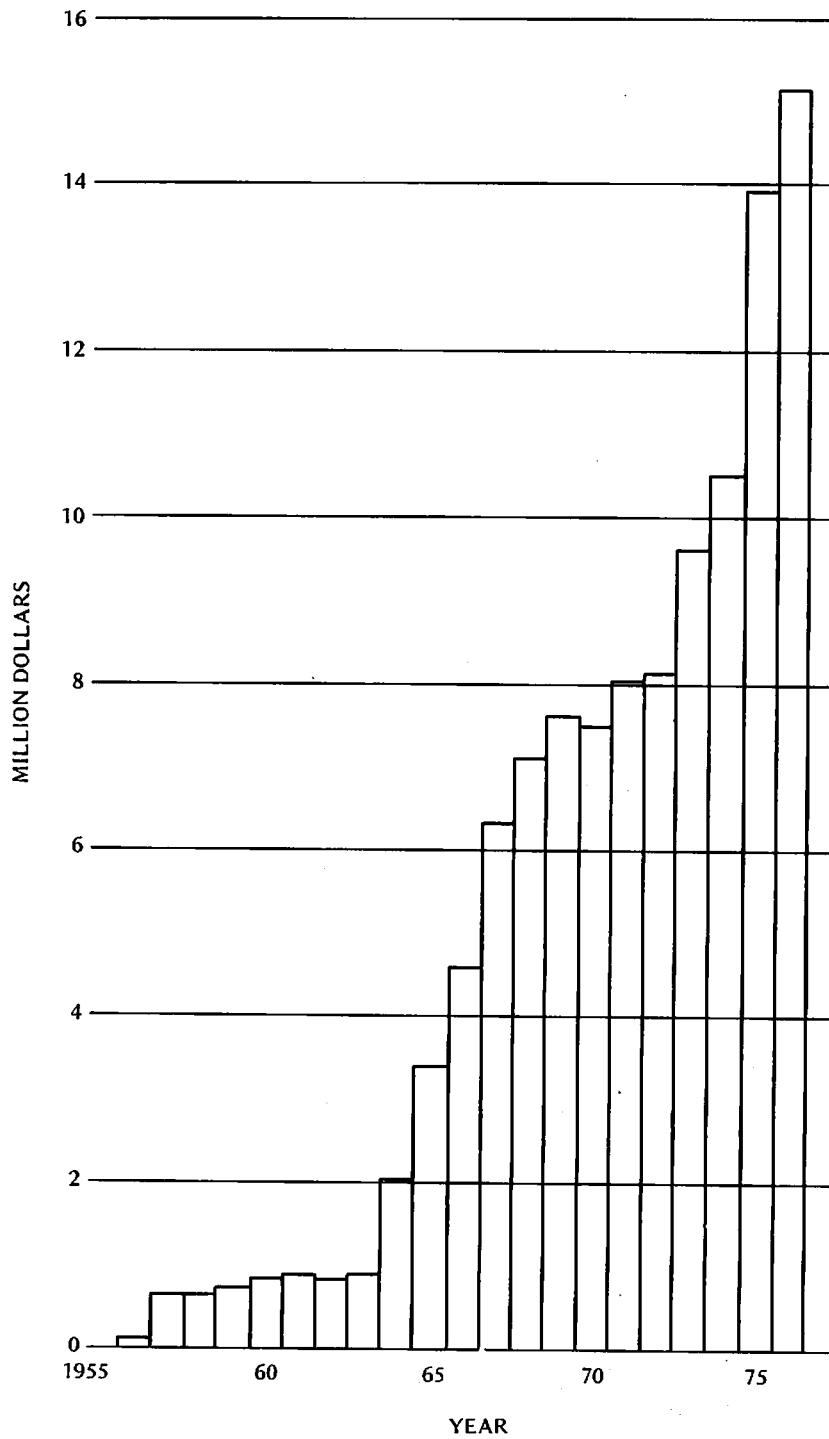
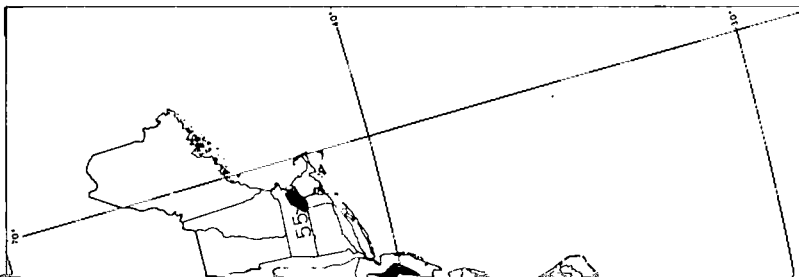


FIGURE 7



TYPE 4 RELATED STUDIES

PLATE 1

COOPERATIVE RIVER BASIN SURVEYS
In Progress as of July 1978

<u>STUDY NAME</u>	<u>STATES COVERED</u>
11. Oregon Rivers (3 Subbasins) Tillamook Bay Goose and Summer Lakes Basin Siletz River Basin	OR
20. Colorado Rivers (1 Subbasin) Rio Grande River Basin	CO, AZ, NM, UT
24. Florida Rivers (1 Subbasin) Northeast Gulf River Basins	FL, AL, GA
52. Yazoo-Mississippi River Basin Restudy	MS
53. Loup & Republican Rivers	NE
54. Green & Kentucky River Basin	KY, TN
55. Massachusetts Water Resources Study	MA
60. Southwest Ohio River Basins	OH
62. Alabama River Basin	AL
63. Black Warrior River Basin	AL
66. Southern Minnesota Rivers Basin	MN, IA, SD
68. Eastern New York River Basins	NY
70. Obion-Forked Deer River Basins	TN
76. Bear River Basin	UT, ID, WY
77. Snake River Basin	ID, WY
78. Tar-Neuse River Basins	NC
79. Western South Dakota River Basins	SD
80. Clark Fork of the Columbia River Basin	MT
81. San Joaquin Valley Basin	CA
82. Arkansas-White-Red River Basin	NM
83. Pocatamico River Basin-Joint Study PL 87-639	WV
84. Ouachita River Basin	LA, AR
86. Chowan River Basin	VA, NC
87. Eastern Washington River Basins (3 Subbasins) Entiat River Basin Palouse River Basin Yakima River Basin	WA
88. North Platte River Basin	WY
90. Chickasaw Basin-Joint Study PL 87-639 Wolf and Loosahatchie River and Nonconnah Creek	TN, MS
91. Pennsylvania Analytical Summary	PA
92. Wisconsin River Basin	WI
93. Delmarva Peninsula Basin	MD, DE, VA
94. Mississippi Statewide Study	MS
95. Northern Missouri River Tributaries Basin	MO
96. Little Colorado River Basin	AZ, NM
97. Southern Iowa Rivers Basin	IA
98. Green River Basin	WY, MT
99. Potomac River Basin	WV
100. Virgin River Basin	NV, AZ
101. Colorado River Salinity Study	CO
103. Arkansas Statewide Study	AR
104. Sacramento Valley Basin	CA
105. New River Study-Joint Study PL 93-251	TN
106. Upper Mississippi River Basin, GREAT Studies	IA
107. Central Ohio River Basins	OH
108. Yadkin-Pee Dee River Basin	SC, NC
109. Alaska Rivers	AK
110. Arkansas River Basin	CO
111. Tennessee River Basin-Alabama Portion	AL
112. Upper Allegheny River Basin PL 87-639	NY, PA
113. Maine Agriculture Water Non-Point Pollution Study	ME
114. Texas Statewide Sedimentation	TX
115. Mount Agamenticus River Basin	ME
116. Des Moines River Basin	IA
117. Nebraska River Basins Special Study for Nebraskas State Water Plan	NE
118. Minnesota River Subbasins PL 87-639	MN
119. Patapsco River Basin	MD
120. New Jersey Statewide Sediment, Erosion, and Agricultural Waste Study	NJ
121. Hamakua Area Agricultural Water Supply Study	HI
122. Lancaster Area Water, Land and Related Resources Study	PA

RIVER BASIN SURVEYS
FRAMEWORK STUDIES
Completed Type 1 (Level A) Coordinated Comprehensive Framework Surveys - June 1976

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